REMARKS

Status of case

Claims 1-4, 6-8, 12-19, 21-23, 26-28, 33-39, and 43-57 are pending.

Interview

Applicants wish to thank the Examiner and his supervisor for the courtesy of an interview. During the interview, the Examiner and Applicants' attorneys discussed the outstanding rejections of the claims. The specific matters discussed during the interview are addressed in the Remarks below.

Rejection under 35 U.S.C. §101

Claims 29-32 were rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter and as not falling within one of the four statutory categories of invention. Applicant cancels claims 29-32 without prejudice.

Rejection under 35 U.S.C. §§102 and 103

Claims 1-3, 5-30, 33-36 and 39-42 were rejected under 35 U.S.C. 102(e) as being anticipated by Rabinowitz et al., (U.S. Publication No. 2003/0179891 A1). Claims 4, 31-32, 37-38 and 43-45 are rejected under 35 U.S.C. 103(e) as being unpatentable over Rabinowitz et al.

Claim 1

Applicant presents amended claim 1 which recites:

> determining a plurality of potential correction factors;
>
> modifying the transfer functions based on the potential correction factors so that predicted transfer functions are generated for each of at least two of the plurality of listening positions for each of the plurality of potential correction factors, the predicted transfer functions representing simulations for the potential correction factors;
>
> accessing a criterion by which to statistically analyze the predicted transfer functions;

> statistically analyzing using the criterion across at least one frequency of
> the predicted transfer functions for the at least two of the plurality of listening
> positions; and

> selecting a correction factor to improve for the criterion at the at least two
> of the plurality of listening positions based on the statistical analysis.

Applicant respectfully contends that the Rabinowitz reference fails to teach or suggest

these limitations. For example, the Rabinowitz reference fails to teach or suggest

"modifying the transfer functions based on the potential correction factors so that

predicted transfer functions are generated for each of at least two of the plurality of

listening positions for each of the plurality of potential correction factors". The Office

Action argues that the Rabinowitz reference teaches this limitation, stating the following:

> The Rabinowitz reference discloses predicted [sic] a transfer function for at least
> two listener positions (*Rabinowitz et al, fig. 4; 48, 52; paras 0030-0031; transfer
> function is calculated and checked for validity so that if the transfer function is
> not valid, adjustments are made and the function is calculated again until valid
> for two locations*)

For convenience, Figure 4 (including blocs 48 and 52) and portions of paragraphs 30-31

of Rabinowitz are reproduced below:

FIG. 4
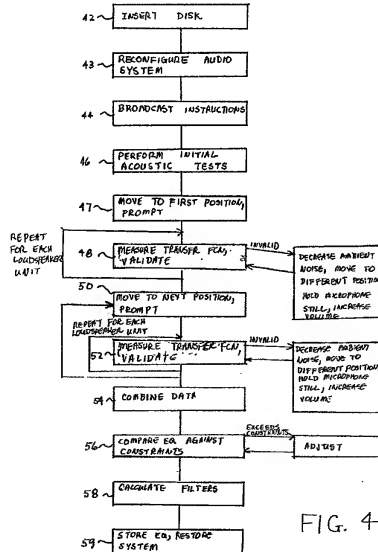
[0030] If the ambient noise is excessive, the user may be instructed to reduce the ambient noise. If the microphones are inoperative or not matched within a tolerance, the process may be terminated. At step 47, the user may then be instructed to move to a first desired listening location, and issue a prompt that the user is ready to proceed. At step 48, the transfer function (that is, the frequency response) at a first listening position are measured by acoustic measuring circuitry 19, and the measurements may be checked for validity, such as being within an appropriate range of amplitude, that the ambient noise is below a predetermined limit, and that the readings are within a range of coherency, stability over time, and repeatability (indicating that microphone does not move too much during the measurement). One test that can be used to test for these conditions is a linearity test. A signal is radiated and the response measured. The signal is then radiated again, scaled down by some amount, such as -3 dB and the response measured and scaled up by +3 dB. The scaled up response to the second signal is then compared with the response to the first signal. A significant difference may indicate that the amplitude is not within an acceptable range, that the ambient noise is above an acceptable limit, or that the readings are not coherent, stable over time, or repeatable. . . .
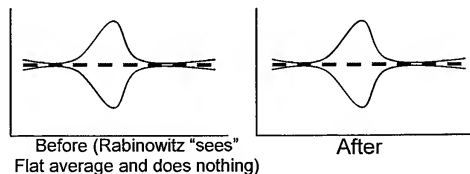
[0031] While an equalization pattern may be calculated based on data from a single location, acquiring data from more than one location generally gives a better result. At step 52, the measurements and tests of step 48 may then be repeated for the second location, preferably for each loudspeaker unit. At the second location an additional test may also be performed, to determine whether the second location is too close to a previous location. One method of determining if a location is too close to a previous location is to compare the frequency response at the second location with the frequency responses at the previous location. If the any of the tests, including the "closeness" test, indicate an invalid measurement, at step 53, the user may be instructed to move or make a correction as in step 49. Steps 50, 52, and (if necessary) step 53 may then be repeated for more locations. If desired, a fixed number (such as five) of locations or a minimum number (such as four) of locations or a maximum number (for example eight) of locations may be specified. If measurements have not been taken at the minimum number of locations, the user may be instructed to move to another location.

The Rabinowitz reference is clear that the blocks 48 and 52 relate to **actual** transfer functions recorded – not predicted transfer functions. In particular, the Rabinowitz reference teaches the following sequence: move a microphone is moved to a first listening location (block 47); record the transfer function at the first listening location and validate the recorded transfer function (block 48); move the microphone to the next listening location (block 50); and record the transfer function at the first listening location and validate the recorded transfer function (block 52). To underscore this difference, claim 1 recites "the predicted transfer functions representing simulations for the potential
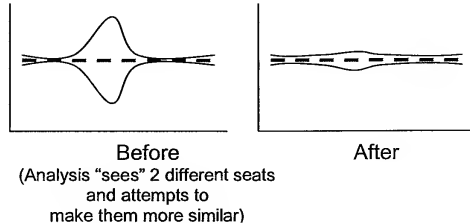
correction factors". Thus, any discussion in the Rabinowitz reference in blocks 48 and 52 are solely directed to recorded (not predicted) transfer functions. And, the Rabinowitz reference wholly fails to teach or suggest predicting transfer functions at multiple listening positions.

Claim 1 further recites "accessing a criterion by which to statistically analyze the predicted transfer functions", "statistically analyzing using the criterion across at least one frequency of the predicted transfer functions for the at least two of the plurality of listening positions" and "selecting a correction factor to improve for the criterion at the at least two of the plurality of listening positions based on the statistical analysis." Apart from the Rabinowitz reference failing to teach or suggest generating "predicted" transfer functions at multiple listening positions, the Rabinowitz reference fails to statistically analyze for "the predicted transfer functions for the at least two of the plurality of listening positions". Instead, the Rabinowitz reference only teaches analysis of a hypothetical "average" seat. Moreover, the Rabinowitz reference wholly fails to teach or even suggest improving for any criterion at multiple listening positions. Instead, the Rabinowitz reference focuses entirely on improving an imaginary "average" seat to the potential detriment of improving the response at the actual seats. The following illustration underscores this point:

Rabinowitz (1 sub, 2 seats)

Before (Rabinowitz "sees"   After
Flat average and does nothing)

Current Application (4 subs, 2 seats)

Before   After
(Analysis "sees" 2 different seats
and attempts to
make them more similar)

As shown above, by focusing on an "imaginary" average seat, the Rabinowitz reference may not necessarily improve the response at the individual seats. In contrast, the invention as claimed focuses on selecting the correction factor so that the criterion's response is improved at the plurality of seats. For example, if the criterion is variance, the correction factor is selected so that the variance from seat-to-seat is improved. Thus, unlike the cited art, the audio response at the plurality of seats may be improved. Therefore, independent claim 1 is patentable over the cited art. Further claims 2-4, 6-8, 33-39, and 43-48 are patentable at least by virtue of dependence on claim 1.

Claim 12

Applicant presents amended claim 12 which recites:

instructions for determining a plurality of potential correction factors;

instructions for modifying the transfer functions based on the potential correction factors so that predicted transfer functions are generated for each of at least two of the plurality of listening positions for each of the plurality of potential correction factors, the predicted transfer functions representing simulations for the potential correction factors;

instructions for accessing a criterion by which to statistically analyze the predicted transfer functions;

instructions for statistically analyzing using the criterion across at least one frequency of the predicted transfer functions for the at least two of the plurality of listening positions; and

instructions for selecting a correction factor to improve for the criterion at the at least two of the plurality of listening positions based on the statistical analysis.

As discussed above, the Rabinowitz reference does not teach or suggest these limitations. As such, independent claim 12 is patentable over the cited art. Further claims 13-16 and 49-51 are patentable at least by virtue of dependence on claim 12.

Claim 17

Applicant presents amended claim 17 which recites:

determining a plurality of potential correction factors;

modifying the transfer functions based on the potential correction factors so that predicted transfer functions are generated for each of at least two of the plurality of listening positions for each of the plurality of potential correction factors, the predicted transfer functions representing simulations for the potential correction factors;

accessing a criterion by which to statistically analyze the predicted transfer functions;

statistically analyzing the predicted transfer functions using the criterion for the at least two of the plurality of listening positions; and

selecting at least one correction factor to improve for the criterion at the at least two of the plurality of listening positions based on the statistical analysis.

As discussed above, the Rabinowitz reference does not teach or suggest these limitations. As such, independent claim 17 is patentable over the cited art. Further claims 18-19, 21-23, and 52-54 are patentable at least by virtue of dependence on claim 17.

Claim 27

Applicant presents amended claim 27 which recites:

instructions for determining a plurality of potential correction factors;

instructions for modifying the transfer functions based on the potential correction factors so that predicted transfer functions are generated for each of at least two of the plurality of listening positions for each of the plurality of potential correction factors, the predicted transfer functions representing simulations for the potential correction factors;

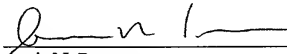instructions for accessing a criterion by which to statistically analyze the predicted transfer functions;

instructions for statistically analyzing the predicted transfer functions using the criterion to determine at least one characteristic of the predicted transfer functions across the at least two of the plurality of listening positions.

As discussed above, the Rabinowitz reference does not teach or suggest these limitations. As such, independent claim 27 is patentable over the cited art. Further claims 28 and 55-57 are patentable at least by virtue of dependence on claim 27.

SUMMARY

Applicant respectfully requests the Examiner to grant early allowance of this application. The Examiner is invited to contact the undersigned attorneys for the Applicant via telephone if such communication would expedite this application.

Respectfully submitted,

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